

## Epilepsy & Cannabis Medicine



Presented By Dr John Teh

# EPILEPSY IS:

“a neurological disorder marked by sudden recurrent episodes of sensory disturbance, loss of consciousness, or convulsions, associated with abnormal electrical activity in the brain.”



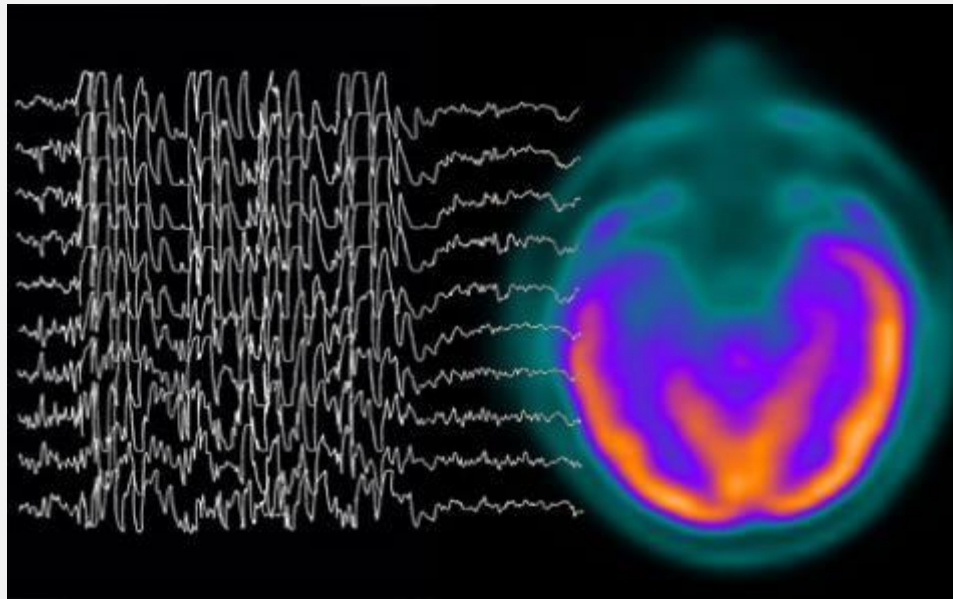
## ANZCCP - Australian and New Zealand College of Cannabinoid Practitioners Medicinal Cannabis Education and Authorized Prescriber Course

- Approx. 250000 patients diagnosed with epilepsy in Australia (1% of population)
- “seizures” are due to disruption of electrical activity in brain  
not chemical imbalance
- not lifelong (childhood epilepsy is often outgrown)
- Approx 1/3 people not responsive to medication.
- Characterized by spontaneous, recurrent seizures.



## **A SEIZURE IS:**

**“a sudden surge of electrical activity in the brain.”**



## Epilepsy: Seizure Triggers

- Missed meds
- Lack of sleep
- Stress (physical/ emotional)
- Xs heat
- Flashing lights
- Hypoglycemia (hunger)



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All types of epilepsy may be amenable to treatment with medicinal cannabis



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## **Epilepsy- treatment points**

Blood levels of anti epileptic drugs

- NB Clobazam
- Valproic acid
- Phenytoin/ Dilantin (ie anti-epileptic medications)
- Re CYP450

Seizure Journal

- start a month prior treatment if possible



## **Cannabinoid Rx may take 3-6months to effect**

Conventional Medications

- Leave conventional medication dose (initially)
- physician discretion
- can wean after treatment takes effect



## CYP-450 potential interaction with CBD

- THC & CBD are metabolized by **Cytochrome p450** enzymes  
Humans have approx 60 Cyp genes  
Gene expression is variable between individuals
- **CBD** in very high doses may partially antagonize Cyp450 enzymes  
**Note:** monitor any drugs that are metabolized by CYP450 if using high dose CBD  
I consider doses above 80mg daily CBD to be potential antagonistic doses

NB

- Clobazam
- Epilim/ phenytoin
- Apixaban
- warfarin





**Dr Bonnie Goldstein (Respected USA doctor in field of Epilepsy and Medicinal Cannabis- current series n> 501)**

CBD rich strains

eg Charlottes Web (27:1)

eg ACDC (24/28 : 1)

68% greater than 50% reduction in seizures

13.5% seizure free

Positive effects

- inc alertness
- inc sleep
- inc mood
- inc energy

SE

- Drowsy
- Diarrhoea
- Fatigue
- Dec appetite



## **Dr Bonnie Goldstein – Dosing Regime**

- 1mg per kg TDS
- Increase dose in increments of 0.5 to 1mg per kg per day (every 2 weeks)
- av dose 5-12 mg per kg per day

variants

- change strains if not working
- slight increase of THC in ratio
- Add THCa oil

le for 20kg child

- 20mg starting dose TDS
- in by 10 to 20 mg at 2 weeks (ie 30- 40 mg TDS)
- max dose 240 mg per kg per day (ie 80 mg TDS)



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## Medicinal Cannabis Education and Authorized Prescriber Course

### Cannabidiol as a new treatment for drug-resistant **EPILEPSY** in tuberous sclerosis complex.

**Author(s)** Hess EJ, Moody KA, Geffrey AL, Pollack SF, Skirvin LA, Bruno PL, Paolini JL, Thiele EA.  
**(Journal, Volume, Issue)** Epilepsia. 2016 Oct;57(10):1617-1624. doi: 10.1111/epi.13499. Epub 2016 Oct 3.)

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Journal, Volume, Issue	Epilepsia. 2016 Oct;57(10):1617-1624. doi: 10.1111/epi.13499. Epub 2016 Oct 3.	
Major outcome(s)	cannabidiol (CBD) was shown to be effective in the treatment of <b>EPILEPSY</b> due to Tuberous sclerosis complex	
Indication	Epilepsy	Abstract
Medication	Cannabidiol	<p><b>OBJECTIVE:</b> Tuberous sclerosis complex (TSC) is an autosomal-dominant genetic disorder with highly variable expression. The most common neurologic manifestation of TSC is <b>EPILEPSY</b>, which affects approximately 85% of patients, 63% of whom develop treatment-resistant <b>EPILEPSY</b>. Herein, we evaluate the efficacy, safety, and tolerability of cannabidiol (CBD), a nonpsychoactive compound derived from the marijuana plant, as an adjunct to current antiepileptic drugs in patients with refractory seizures in the setting of TSC.</p> <p><b>METHODS:</b> Eighteen of the 56 patients who have enrolled in our current expanded-access study of cannabidiol for patients with treatment-resistant <b>EPILEPSY</b> carry a diagnosis of TSC.</p>
Route(s)	Oral	
Dose(s)	up to 50 mg/kg	
Duration (days)		
Participants	18 children with tuberous sclerosis	
Design	Open study	
Type of publication	Medical journal	
Address of author(s)	Massachusetts General Hospital, Boston, Massachusetts, U.S.A.	



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- CBD- 5 mg per kg per day
- increase by 5 mg per kg per day
- to total max 50 mg per kg per day
- ie 20 kg child = 1000 mg per day (333mg TDS)
- 56 patients in study (Open Study)

### Results

- seizure freq **-48.8%** (after 3 months)
- pts using clobazam concurrently
- responder rate 58.3% (33.3% patients not taking clobazam)

### 18 patients (of 56) SE

- drowsiness (44.4%)
- ataxia (27.8%)
- diahorrea (22.2%)

### Conclusions

- CBD may be an effective well tolerated Rx option for refractory seizure in Tuberous Sclerosis Complex
- Gold standard trial warranted

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(Lancet Neurol. 2016 Mar;15(3):270-8. doi: 10.1016/S1474-4422(15)00379-8. Epub 2015 Dec 24.)

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Route(s)	Oral	
Dose(s)	2-5 mg/kg body weight per day, up-titrated until intolerance or to a maximum dose of 25 mg/kg or 50 mg/kg per day	
Duration (days)	365	
Participants	214 children and young adults with highly treatment-resistan	
Design	Open study	
Type of publication	Medical journal	
	Comprehensive Epilepsy Center, New	



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Open study of 214 patients with treatment resistant epilepsy in epilepsy centres across USA

- 2-5mg per kg per day
- titrated up to intolerance or 25/ 50 mg per kg per day
- ie for 20 kg child- 1000 mg per day (333mg TDS) max

Results

- 36.5% reduction in motor seizures

Side Effects

- somnolence 25%
- fatigue 13%
- diarrhoea 19%
- decreased appetite 19%
- convulsions 1 %

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## General Rules for Medicinal Cannabis Dosing in Epilepsy

Each endocannabinoid system is individual- thus each treatment is patient specific

**n1 studies** (individual cases in Australia)

- response to **THCa**
- not available yet commercially
- in Australia
- non-psychoactive form of THC
- essentially “raw” cannabis

**CBD** effective

- High CBD strains
  - Small THC
  - 1e (20:1) CBD predominant
- 
- Linalool (terpene in Lavender)  
Perhaps cannabis strains high in linalool will be effective  
Lavender inhalation



## General Rules for Medicinal Cannabis Dosing in Epilepsy

### “Start low, go slow”

CBD- 1mg/kg (divided daily dose)

inc each 7 days by 0.5mg per kg (divided TDS)

eg 20kg kid

Week 1 - 20mg TDS

Week 2 - 30mg TDS

Week 3 - 40mg TDS

Week 4 - 50mg TDS etc

Titrate to effectiveness

**Aim at max dose** – eg for 20kg child

**15mg per kg per day**

ie 300mg per day (ie 100mg TDS)





## **General Rules for Medicinal Cannabis Dosing in Epilepsy**

- Patients will all respond differently to different chemovars
- Experiment with different chemovars
- Stay with effective chemovar
- Note: Change away from effective chemovar  
may result in seizure recurrence (“Israeli Experience”)
- Treat concurrent ailments symptomatically  
Eg sleep/ pain/ anxiety  
ie add THC at night to assist with sleep-  
results in decrease seizure triggers
- Some emerging and historical evidence re efficacy of THC in seizure control
- Makes sense re ECS retrograde inhibition on receptors expressed on  
neurons on area of epileptic focus



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